

User Guide

Elcometer 407L Dual & Triple Angle Glossmeters

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These operating instructions are a short User Guide only. A copy of this Instruction Manual is available for download on our website www.elcometer.com. For the avoidance of doubt, please refer to the original English version.

Gauge dimensions: 65 x 140 x 50mm (2.56 x 5.51 x 1.97"). Gauge Weight: 790g (1.7lb)

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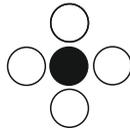
1 GAUGE OVERVIEW AND BOX CONTENTS



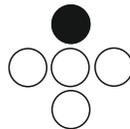
Gauge Overview

1 Navigation Buttons

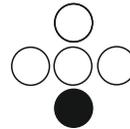
Select / Enter / Measure



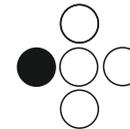
Up (▲)



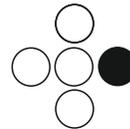
Down (▼)



Left (◀)



Right (▶)



2 On/Off Key

3 USB Data Output Socket

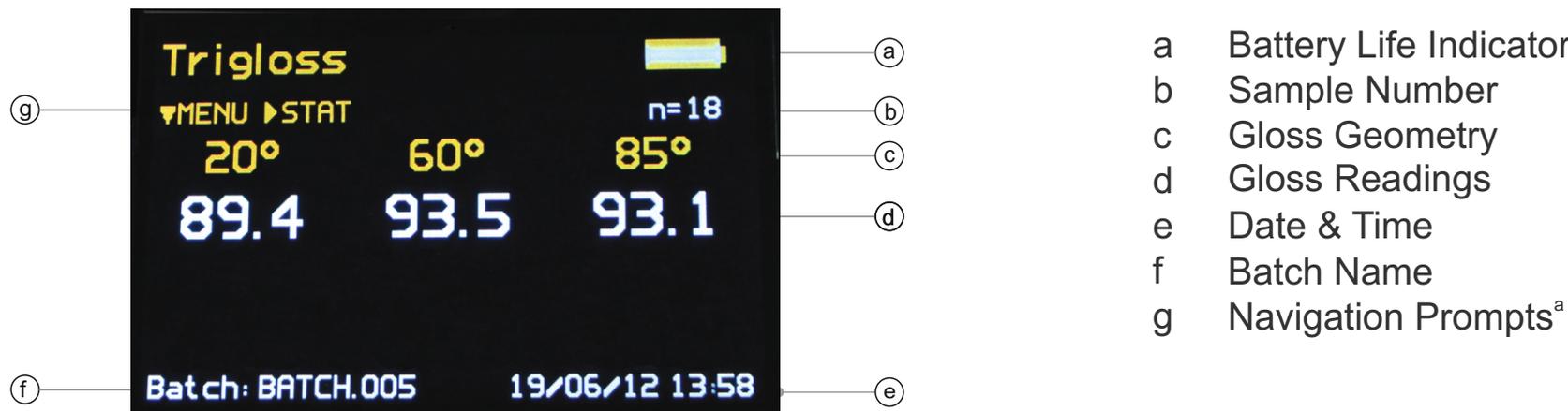
4 Calibration Tile (Magnetised)

Box Contents

- Elcometer 407L Glossmeter
- ISO 17025 High Gloss Calibration Tile with Certificate
- Gloss Tile Cleaning Cloth
- Transit Case
- Mains Charger (UK, EU & US)
- USB Cable & ElcoMaster™ 2.0 Software
- User Guide

2 USING THE GAUGE

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The image shows the Triple Angle version

^a Navigation Prompts: Available navigation options are displayed as prompts on the top left of every screen. Use the indicated button to access the required menus and options. Pressing  once or twice from any menu will return the User to the measurement (home) screen.

3 GETTING STARTED

3.1 SWITCHING ON / OFF

- 1 Press the On/Off key
- 2 The Elcometer logo will be displayed followed by the measurement (home) screen

To switch off, press and hold the On/Off key for 3 seconds.

The gauge will switch off automatically after 30, 60, 90 or 120 seconds of inactivity as set by the User via Menu/Setup/Instrument Setup. This feature can also be disabled.

3 GETTING STARTED (CONTINUED)

3.2 SELECTING THE LANGUAGE

- 1 Select Menu/Setup/Instrument Setup
- 2 Press the  or  navigation button to highlight “Language”. Press  to select.
- 3 Press the  navigation button to scroll through the available languages until the required language is displayed.

3.3 SETTING THE DATE AND TIME

- 1 Select Menu/Setup/Instrument Setup
- 2 Press the  or  navigation button to highlight “Set Date & Time” followed by  to select
- 3 Press the  navigation button and adjust the date and time following the on screen prompts.

3.4 SETTING THE MEASUREMENT PARAMETERS

Via Menu/Setup/Measurement Menu users can select which measurement values are displayed:

Geometry: Display gloss readings at 1*, 2* or 3[†] gloss angles

Range: Select AUTO (full scale) or BLACK (standard gloss scale) or MIRROR (extended scale for highly reflective materials, polished metals, requires calibration using Mirror Standard).

3.5 SETTING THE PASS/FAIL MEASUREMENT PARAMETERS

Via Menu/Setup/Measurement Menu/Pass/Fail Users can enable on-screen pass/fail indication and set measurement criteria.

- 1 Select Menu/Setup/Measurement Menu/Pass/Fail
- 2 Press the  or  navigation button to highlight “Pass/Fail”, followed by  to enable
- 3 Press the  navigation button to edit the pass and fail criteria.

* Dual and Triple Angle Glossmeter - 60°, 20° & 60°

† Triple Angle Glossmeter only - 20° & 60° & 85°

3.5 SETTING THE PASS/FAIL PARAMETERS (CONTINUED)

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When enabled, any measurement which falls between the min and max values will be considered a pass and the header text will be coloured green.

Readings outside the min and max values will be deemed a fail and the header text will be coloured red.

4 CALIBRATING THE GAUGE

The gauge has an automatic calibration option which detects when the Elcometer 407L calibration tile is in position. This is switched ON by default but can be disabled via Menu/Setup/Calibration Menu.

The gauge is supplied with filter paper protecting the calibration tile. This must be removed before calibrating.

4.1 CALIBRATING WHEN AUTOMATIC CALIBRATION IS ENABLED

- 1 Place the gauge on the calibration tile and press the  navigation button. The following message will be displayed:

“Tile Detected - Assigned Values; 20° - xx.x; 60° - xx.x; 85° - xx.x”^b.

Note: The calibration values of the tile supplied with the Elcometer 407L are pre-programmed into the gauge. If using a different tile, follow the procedure outlined in Section 4.3.

- 2 Press the  or  navigation button to highlight “CALIBRATE” followed by  to select
- 3 Press the  or  navigation button to highlight “CONFIRM” followed by  to select and save the calibration

4.2 CALIBRATING WHEN AUTOMATIC CALIBRATION IS DISABLED

- 1 Place the gauge on the calibration tile and select Menu/Calibrate Instrument
- 2 Press the  or  navigation button to highlight “CONFIRM” followed by  to select and save the calibration

Note: The calibration values of the tile supplied with the Elcometer 407L are pre-programmed into the gauge. If using a different tile, follow the procedure outlined in Section 4.3.

^b Triple Angle gauge only. Dual Angle gauges will display 20° - xx.x; 60° - xx.x.

4 CALIBRATING THE GAUGE (CONTINUED)

4.3 CALIBRATING WHEN USING DIFFERENT CALIBRATION TILES

If using a different tile to the one identified by the Elcometer 407L, the calibration values of the tile must be manually entered, before performing the calibration procedure.

- 1 Select Menu/Setup/Calibration Menu
- 2 Press the  or  navigation button to highlight "Tile Value 20" followed by  to select
- 3 Follow the on screen instructions to set the tile value
- 4 Repeat for "Tile Value 60" and "Tile Value 85", where appropriate.

5 TAKING A READING

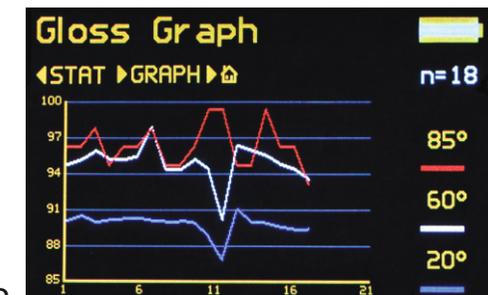
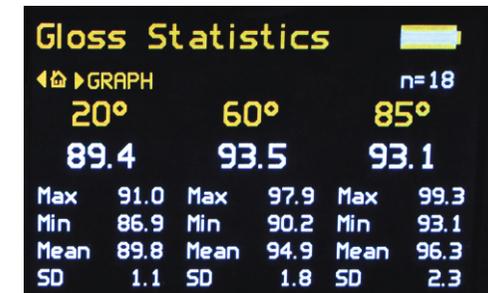
- 1 Place the gauge on the substrate and press the  navigation button
- 2 The reading is taken and the measurement data updated

The gauge can be set to take automatic readings at 2, 5 or 10 second intervals. This feature can be enabled via Menu/Setup/Measurement Menu/Auto Measure.

Pressing the  navigation button will access the gloss statistics screen, displaying statistics for the current batch. Readings can also be taken in this screen and the statistics will be updated accordingly.

Pressing the  navigation button in the gloss statistics screen will access the gloss graph; this gives a graphical representation of the gloss measurements.

Note: Graphs (dependent upon the gloss angle available) will only be displayed when two or more measurements have been taken.





All Batch functions are accessed via Menu/Setup/Data & Batch Menu. Limited Batch functions are also displayed on the initial Menu screen.

Batch functions are only available when Memory is switched ON (Menu/Memory).

6.1 CREATING BATCHES

- 1 Select Menu or Menu/Setup/Data & Batch Menu
- 2 Press the or navigation button to highlight “Start New Batch” followed by to select
- 3 Readings are automatically stored in the open batch until a new batch is created.

Batches are named “BATCH.xxn” by default, where “xxn” is incremented for each new batch created. “BATCH” can be changed to a user defined name by connecting to a PC - see Section 6.3.

Statistics for the current batch can be viewed by pressing the navigation button whilst in the measurement (home) screen. A trend graph of the individual gloss values can also be viewed by pressing again.

Menu/Clear Current Batch deletes all readings from the open batch.

Menu/Delete All Batches deletes all readings from all batches stored in the memory.

6 BATCHING (CONTINUED)

6.2 AUTO BATCHING

“Auto Batch” allows users to pre-define the number of readings to be stored in a batch before a new batch is opened automatically.

- 1 Select Menu/Setup/Data & Batch Menu
- 2 Press the  or  navigation button to highlight “Auto Batch”
- 3 Press the  navigation button to toggle ON
- 4 Press the  navigation button to highlight “Batch Size” followed by  to select
- 5 Adjust the batch size following the on screen prompts

6.3 VIEWING BATCH DATA

- 1 Using ElcoMaster™ 2.0 Software - supplied with the gauge, and available as a free download at www.elcometer.com - the gauge can transmit readings to a PC for archiving and report generation. Data can be transferred via USB
- 2 Batches can be saved by connecting the gauge to ElcoMaster™ 2.0 (using the USB supplied) and selecting “Download from Gauge”. The ElcoMaster™ 2.0 wizard will then guide the User through the menu instructions to select and save the chosen batch
- 3 Once saved the information contained in the batch can be viewed and reported upon
- 4 Alternatively, the gauge can be connected by Bluetooth® to a PC and having created a batch in ElcoMaster™ 2.0, the batch may be populated one reading at a time using the live reading feature.

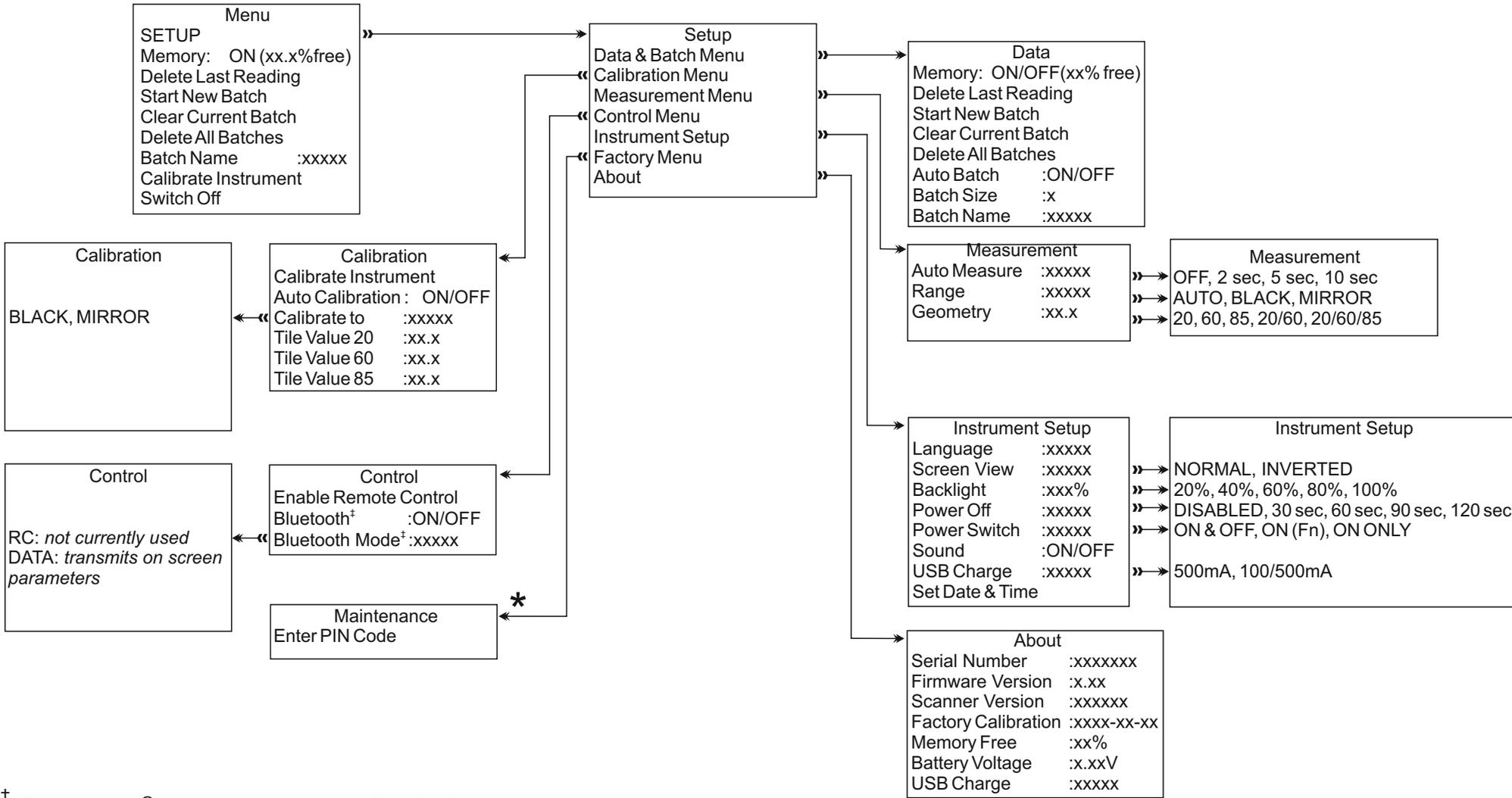
‡ Bluetooth® not currently available in Japan

6 BATCHING (CONTINUED)

en 6.4 CREATING USER DEFINED BATCH NAMES

- 1 Connect the instrument to a PC using the USB cable supplied
- 2 Double click on the USB data folder “**IQ Meter**”. This can be accessed in Windows via “**MY COMPUTER**”, within this file open CONFIG>Batches. This document is a .csv file and can be opened/edited in programs such as Notepad, Excel or Wordpad. User defined names should be entered into this document with each name listed on a separate line. The batch name length is limited to 8 letters or numbers, further characters are not included the description
- 3 Switch OFF and ON to transfer the new batch names to the gauge
- 4 Select Menu/Setup/Data and Batch Menu
- 5 Press the  or  navigation button to highlight “Batch Name” followed by  to select the required name from those stored in the gauge.

7 MENU STRUCTURE



† Bluetooth® not currently available in Japan

* For Elcometer use only

8 DOWNLOADING DATA

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Using ElcoMaster™ 2.0 - supplied with the gauge and available as a free download at www.elcometer.com, live gauge readings can be recorded via Bluetooth®‡ and batch data can be transferred via USB to PC for archiving and report generation. See Section 6.3 for further information on downloading batch data.

9 TECHNICAL SPECIFICATION

Resolution	0.1 GU		
Repeatability	0.2 GU		
Reproducibility	0.5 GU		
Power	USB rechargeable in 4.5 hours (the Elcometer 407L can only be charged via USB)		
Battery Life	>8hrs continuous operation or 10,000 readings		
Memory	>999 readings		
Operating Temperature	15-40°C	Relative Humidity	Up to 85%, non-condensing
Gauge Dimensions h x w x d	65 x 140 x 50mm (2.56 x 5.51 x 1.97")	Gauge Weight	790g (1.7lb)
Can be used in accordance with: ASTM D523, ASTM D2457, DIN 67530, ISO 2813, ISO 7668, JIS 8741			

‡ Bluetooth® not currently available in Japan

10 SPARES & ACCESSORIES

Description	Part Number
High Gloss Calibration Standard	T40724722
Medium Gloss Calibration Standard	T40724726
Low Gloss Calibration Standard	T40724727
Mirror Gloss Calibration Standard	T40724728

11 GLOSSARY

11.1 GLOSS

Gloss is the visual sensation associated with the brightness of direct light reflected in a surface. Surfaces with high reflectance are determined as glossy; less reflective surfaces are semi-gloss or matt. The Glossmeter will quantify this effect by measuring light reflection from a sample at defined angles.

The measurement angles most commonly used for gloss are 20°, 60° and 85°. The most appropriate angle should be selected dependent on the glossiness of the sample surface. Using the correct measurement geometry increases resolution and improves the correlation of results with human perception of quality.

To determine the correct measurement angle the surface should be assessed with the 60° geometry:

- Matt surfaces which measure below 10 GU at 60° should be re-measured with the 85° angle
- High gloss surfaces which measure above 70 GU at 60° should be assessed using the 20° angle.

The 60 degree angle is best employed on mid gloss samples measuring between 10 and 70 GU.

12 LEGAL NOTICES & REGULATORY INFORMATION

The Elcometer 407L meets the Radio and Telecommunications Terminal Equipment Directive. This product is Class B, Group 1 ISM equipment according to CISPR 11. Class B product: Suitable for use in domestic establishments and in establishments directly connected to a low voltage power supply network which supplies buildings used for domestic purposes. Group 1 ISM product: A product in which there is intentionally generated and/or used conductively coupled radio-frequency energy which is necessary for the internal functioning of the equipment itself.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Modifications not expressly approved by Elcometer Limited could void the user's authority to operate the equipment under FCC rules.

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